

Specifications for Order, Storage, Handling and Planting of Containerized Shortleaf Pine Seedlings at Stinging Fork Falls State Natural Area

Purpose

A project at Stinging Fork Falls SNA is underway to harvest loblolly pine plantation and restore the area to native forest vegetation, with emphasis on restoration of shortleaf pine (*Pinus echinata*) and desired future structure of open woodland and savannah dominated by mixed shortleaf and oak species. This contract will span the period from April 1, 2022 – May 1, 2024.

Background

Harvesting of the remaining loblolly pine plantation is scheduled for the summer of 2022. Timber stand improvement to kill unwanted hardwoods after the pine harvest will occur in summer of 2022. The area will be burned under prescribed conditions in fall of 2022 or spring/fall of 2023. *Planting of shortleaf pine seedlings, the subject of this contract, will occur in winter of 2023 - 2024.*

Project Managers (PM)

Primary PM: Lisa Huff, Stewardship Ecologist, TN Division of Natural Areas.
Lisa.huff@tn.gov, 865-207-0138.

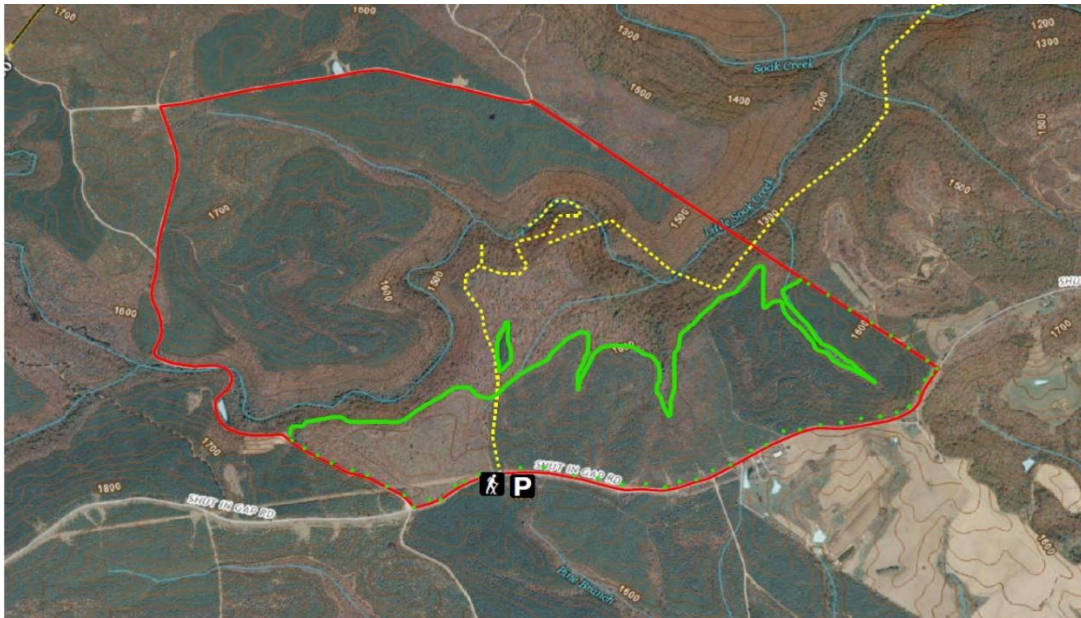
Secondary PM: Mike Black, Director, Shortleaf Pine Initiative,
shortleafpineinitiative@gmail.com, 423-718-3612.

Additional Contact: Jason E. Miller, TN Division of Natural Areas, Natural Areas Administrator, Jason.e.miller@tn.gov, 615-397-8224.

Details

This contract is for the acquisition, storage, handling, and planting of containerized shortleaf pine seedlings at Stinging Fork Falls State Natural Area on former loblolly pine plantations that have been harvested from 2020 to 2022 on approximately 200 acres of land (Figures 1 and 2).

Map of Planting Area, Figure 1



The planting area is bounded in this figure by the solid and dotted green lines. The natural area boundary is depicted by the solid red line. The SW side of the planting area is bounded by a forest service road that connects to Shut-In-Gap Road. The northern boundary of the planting area is bounded by a distinct fire break (solid green line). There is one “orphan stand” are of approximately 1.5 ac above the northern boundary of the contiguous planting area to be included in the planting. The east boundary is adjacent to private land; the northern corner of the east line is at approximately N35.719380, W-84.916075; the southeast corner of the east line is at approximately N35.716035, W-84.910811.

Figure 2.



Specifications

The contractor will:

1. Order enough containerized seedlings to ensure a planting density of 300 containerized seedlings per acre over the entirety of the harvested area.
 - a. The planting area is approximately 200 acres corresponding to the area of loblolly pine harvested (Figures 1 and 2), excluding perimeter fire breaks, internal skid trails and streamside management zones.
2. Ensure that the seedling order is made in time to have the seedlings supplied and ready at the following times:
 - a. Planting between January 1, 2023 to April 15, 2024.
 - b. The containerized seedlings must be planted within six weeks after lifting (*total off-site and on-site storage not to exceed 6 weeks*).
3. Provide refrigerated storage between seedling lifting at the supply nursery and planting.
 - a. Notify the PM of the date the seedlings were lifted from the nursery, the date and time received, and the date and time placed into refrigerated storage with a description of handling and care for any delay of more than one hour between receipt and storage.
 - b. Ensure seedling viability and ensure that seedlings in storage are not allowed to dry out.
 - c. Keep the air temperature low and humidity high to slow transpiration. Maintain air temperature at 35-38 F.
 - d. Periodically inspect the seedlings and their needles to determine if watering is necessary and to check for desiccated needles or mold. Discard and do not plant damaged, desiccated, or moldy seedlings; these are unusable seedlings.
 1. Report to the PM any quantity of discarded seedlings.

4. Plant seedlings when the air temperature is below 70 degrees F. Planting between 35-55 degrees F is ideal and preferred.
5. Plant when the soil is moist, and no hot dry weather (70 degrees or above) is predicted in the ten-day National Weather Service forecast for Spring City, Tennessee. Ideal weather during planting, and for the 7-day National Weather Service forecast after planting, should be cool and moist for the location of Spring City, Tennessee.
6. Protect seedlings brought on-site using refrigerated transport or keep them protected and moist with appropriate coverings such as insulation tarps or large portable coolers.
 - a. Transport on cooler days and cooler times of the day if refrigerated transport is not available.
 - b. Protect seedlings from sunlight and wind at all times.
 - c. Park unrefrigerated transport vehicles in the shade if possible, or in lower spots; provide as much shielding for the seedlings from destructive elements as possible.
 - d. Rough handling negatively impacts viability; the contractor shall ensure there will be no rough handling. Contractor shall order enough seedlings to ensure a planting density of 300 seedlings per acre, planted across the entire planting area in Figures 1 and 2, despite any loss that may occur in storage and handling.
7. Ensure that planting crews follow industry standards for proper planting of this species.
 - a. The root collar of seedlings must not stick above the soil surface. The root collar (J-crook of the seedling) is to be planted no less than ½" below the soil surface. The j-crook must not be buried more than 2" below the soil surface. [Acceptable planting depth is between 1/2" to 2 inches below the soil surface.]

- b. Planting is not to occur when the ground is frozen.
 - c. Planting holes will be deep enough to ensure that the roots are vertical to their terminus and not bent upward (“J-rooted or U-rooted”).
 - d. Each seedling should be packed firmly in the soil and the planting hole closed around the roots. A firm pull on the seedling should not move the plant.
 - e. The tap root should not be planted at more than 30 degrees from perpendicular to the soil surface.
8. Ensure that seedlings are planted over the entirety of the mapped planting area at an even distribution and spacing (Figures 1 and 2).
- a. Planting will exclude (not occur within) the established fire break around the perimeter of the area.
 - b. Planting will exclude (not occur within) the interior skid trails.
 - c. Planting will exclude (not occur within) the SMZs (streamside management zones) which are recognizable on the ground within the defined project perimeter as areas not harvested.
9. Contact the PM at least two days prior to expected planting. PM must be made aware in advance of any time planting crews are on-site.
10. Instruct planting crew to adjust planting/handling as necessary as directed by the PM on-site.